

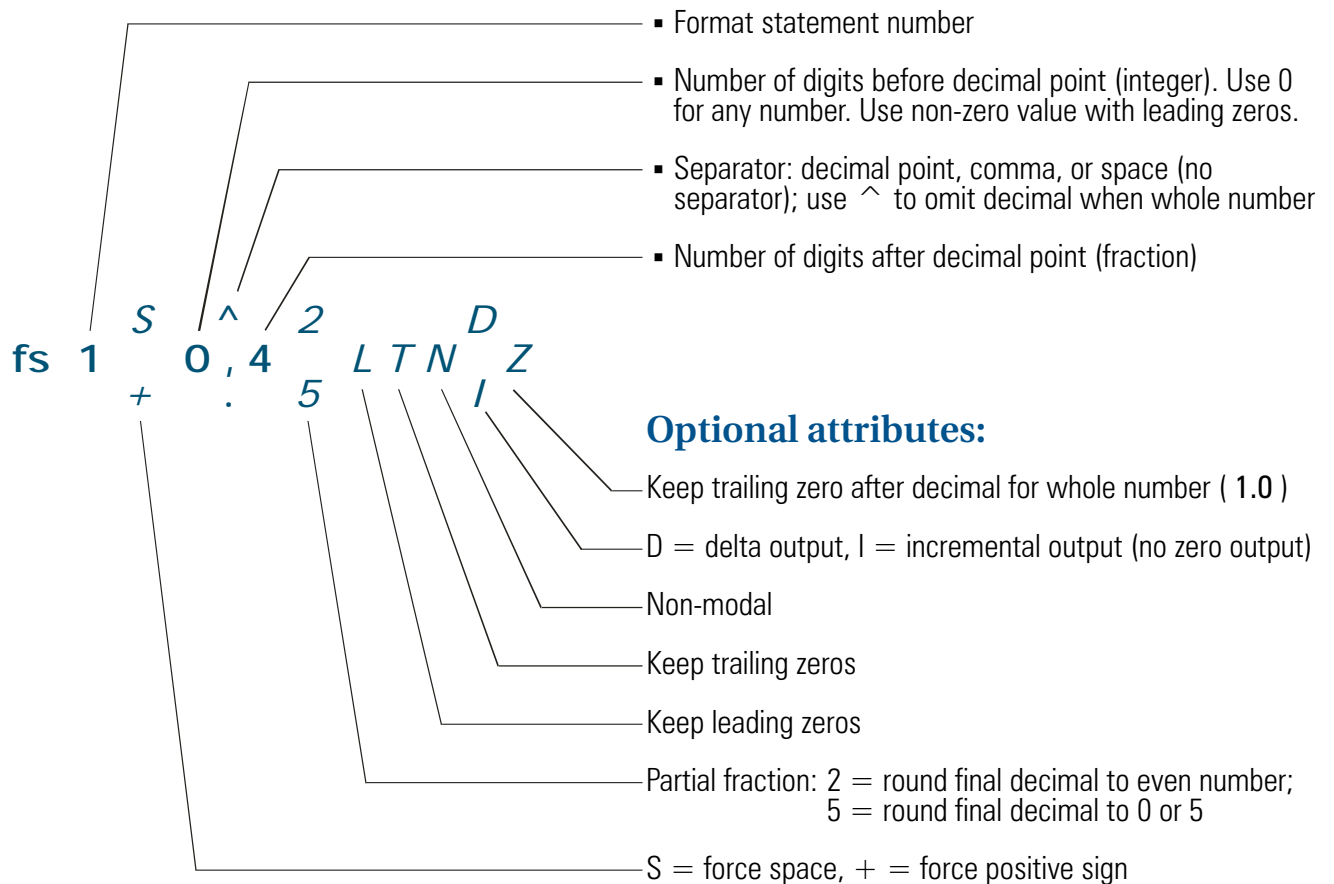
MP Quick Reference

Keep these pages handy when you return to your shop. Use them as a quick reference to support many common post editing tasks.

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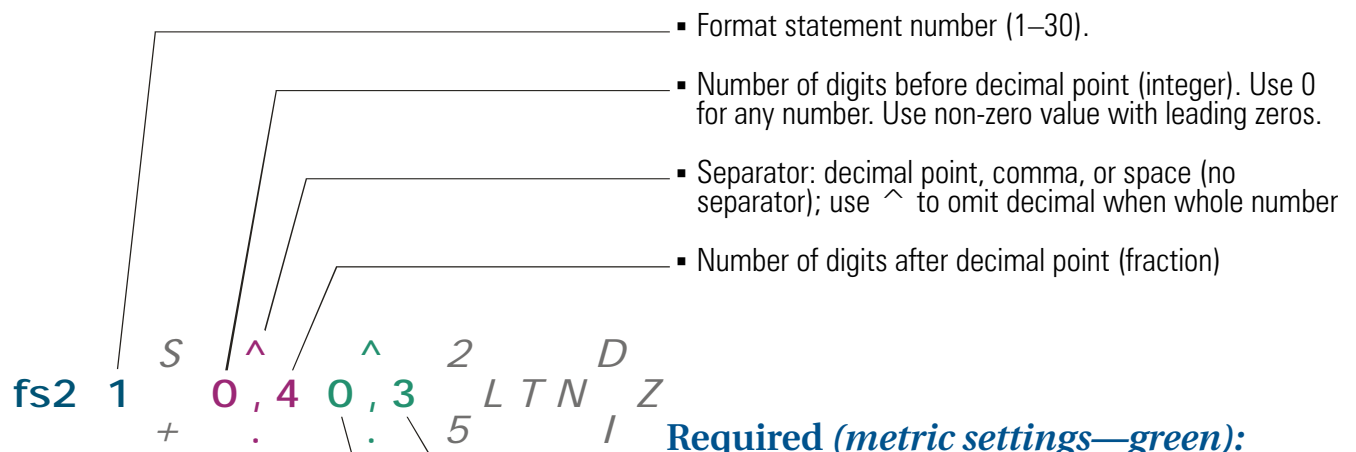
Format statement (fs, fs2) quick reference

Required:



fs2 has separate settings for both inch and metric use. All of the optional attributes (in gray) are the same as fs.

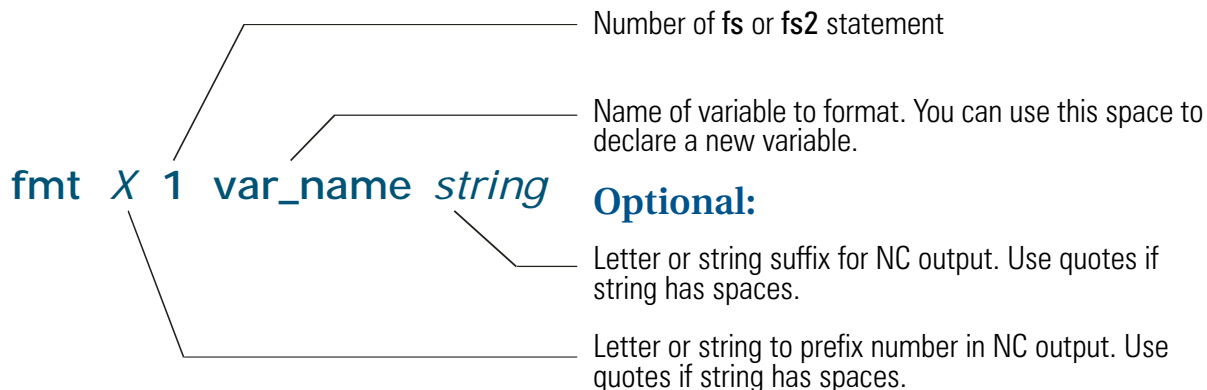
Required (*inch settings—purple*):



Required (*metric settings—green*):

Format assignment (fmt) statements

Required:



Optional:

The following variables are automatically assigned to `fs 1`—no further action is required on your part. If you wish, you can override this by creating a different `fmt` statement. The `X`, `Y`, `Z`, `I`, `J`, or `K` is automatically added.

<code>x\$</code>	<code>xh\$</code>	<code>xr\$</code>	<code>i\$</code>
<code>y\$</code>	<code>yh\$</code>	<code>yr\$</code>	<code>j\$</code>
<code>z\$</code>	<code>zh\$</code>	<code>zr\$</code>	<code>k\$</code>

Examples of common format statements

The following examples show how to build format statements for some specific formatting goals. Many more are possible.

Statement	Usage	Sample output
<code>fs2 9 0.4 0.3</code>	4 decimal places inch, 3 decimal places metric	12.34, 1.8756, 0.8852, 8. (inch) 12.34, 1.885, 0.782, 8. (metric)
<code>fs2 9 0.4 0.3t</code>	4 decimal places inch, trailing zero 3 decimal places metric, trailing zero	12.3400, 1.8756, 0.8852, 8.0000 (inch) 12.340, 1.885, 0.782, 8.000 (metric)
<code>fs 9 0.3z</code>	3 decimal places, force decimal 0 for whole number.	16.0, 1.882, 3.14
<code>fs 9 0 ^ 3</code>	Use three decimal places for fraction, do not output decimal for whole numbers. Useful format for generic sequence numbers if they might be decimal.	225, 225.1, 100.486
<code>fs 9 4 ^ 3l</code>	Use three decimal places for fraction, do not output decimal for whole numbers, pad with leading zeros to 4 places.	0225, 0025.1, 1240.486
<code>fs2 9 4 0 3 0l</code>	Integer values, pad with zeros to 4 digits for inch, 3 digits for metric	0025, 0001, 1285 (inch) 025, 001, 123 (metric)
<code>fs 9 2.2t</code>	Decimal output padded to 2 integer digits and 2 decimal places. Useful format for time.	12.25, 01.55, 05.10

String selector tables

sg00 : "G00" # List element (0)
sg01 : "G01" # List element (1)
sg02 : "G02" # List element (2)
sg03 : "G03" # List element (3)

sgcode : "" # Target string

fstrsel sg00 gcode\$ sgcode 4 -1

List of string variables

List of string values. These are the strings that will be output in your NC file.

Declare target string after list of strings. This terminates the table.

Overflow indicator. Leave this as -1.

Number of items in string table.

Target variable.

Selector variable.

First item in string table.

Output modifiers

	Syntax	Solve global formula	Round current value	Force output	Update prv_ value	Usage
Variable name—no modifier	var	Yes	Yes	No	Yes	Normal behavior
Force variable	*var	Yes	Yes	Yes	Yes	Force output regardless of modality.
Update variable	!var	Yes	Yes	No	Yes	Updates prv_ value with current value without output.
Round variable	@var	Yes	Yes	No	No	Round the current value.
Debug variable	~var	No	No	Yes	No	Force output for debugging (no formatting).
Conditional output	`var	Yes	Yes	No	Yes	Output only if there is other output on the postline.

Declaring/initializing variables

scompany : "ACME Machine Tool Co." # Initializing a string

sstrm : "" # Initializing a blank string

my_var : 0 # Initializing numeric variables

my_var2 : 0.125

Common post tasks / How do I ...?

This section shows you how to make common post edits. The examples are based on the Generic Fanuc 3X Mill post, but can be easily applied to most MP posts.

How do I...?

Change the start-of-file character

- 1 Search for the postblock **pheader\$** in the post customization file.
- 2 Replace the % character in this line:
`"%", e$`
 with the one needed on for your machine tool.
- 3 If the character cannot be typed, replace "%" with the proper ASCII decimal code. For example:
`36, e$ # This will output a '$' dollar sign`
- 4 Remove (or **#comment out**) the line if no special character is needed.



TIP: See page 13 for a chart of ASCII-hex-decimal characters.

Change the end-of-file character

- 1 Search for the postblock **peof\$** in the post customization file.
- 2 Replace the % character in this line:
`"%", e$`
 with the one needed on for your machine tool.
- 3 If the character cannot be typed, replace "%" with the proper ASCII decimal code. For example:
`36, e$ # This will output a '$' dollar sign`
- 4 Remove (or **#comment out**) the line if no special character is needed.

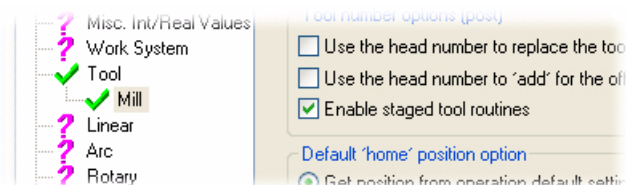


TIP: See page 13 for a chart of ASCII-hex-decimal characters.

Pre-stage tools for the machine's tool changer

This is set in the control definition.

- 1 Go to the **Tool** page in the **Control Definition Manager**.
- 2 Select the **Enable staged tool routines** option.



- 3 Select the type of pre-staging by setting the **staget1type** as described in the next procedure.

At the end of the NC file, I want the first tool pre- staged

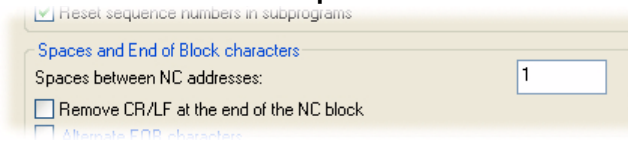
- 1 Find the following lines in your .PST file.
- 2 Set the value of **stagetltype** to either 1 or 2, as desired:


```
stagetltype : 1    #0 = Do not stage 1st tool
                #1 = Stage 1st tool at last tool change
                #2 = Stage 1st tool at end of file (peof)
```

Control the number of spaces between words in the NC output

This is set in the control definition.

- 1 Go to the **NC Output** page in the **Control Definition Manager**.
- 2 Enter the desired value in the **Spaces between NC addresses** field.



This sets the **spaces\$** variable in your post customization file.

Separate the tool number and tool change command

This change must be done in two postblocks.

- 1 Find for the postblock **psof\$** in the post customization file.
- 2 Replace the entire line:

```
pbld, n$, *t$, sm06, e$
```

with these lines:

```
pbld, n$, *t$, e$
pbld, n$, sm06, e$
```

- 3 Repeat these steps for the postblock **ptlchg\$**.

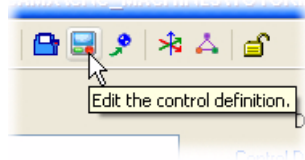
The tool number is stored in the **t\$** variable. The tool change command—typically **M6**, but you can of course define this to be any string that you require—is stored in the variable **sm06**. By reordering the lines, you can reverse where the tool number and tool change command appear.

Use G92 instead of G54

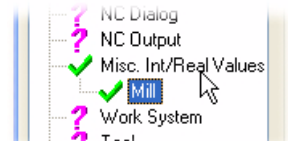
In Mastercam's generic posts, this is controlled by Miscellaneous Integer number 1. Use the **Control Definition Manager** to set a default value that is stored in the post text area of your post customization file. Operators can then choose to override this when creating individual toolpaths.

Follow these steps to set the default value.

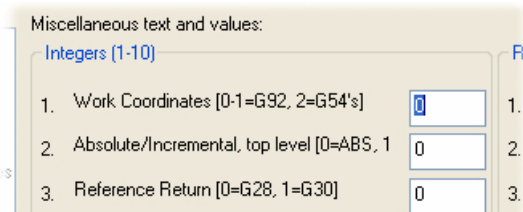
- 1 Select **Machine Definition Manager** from the **Settings** menu.
- 2 If necessary, select and load the machine definition that uses the desired post.
- 3 Click the **Edit control definition** button.



- 4 Select the **Misc Int/Real Values** page.



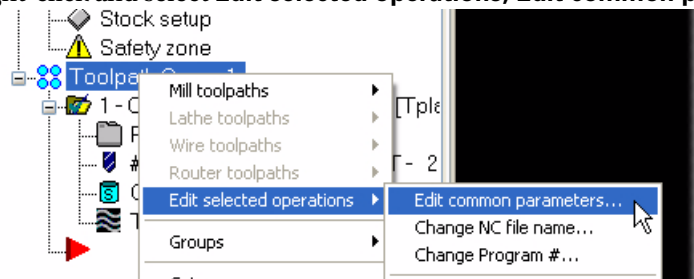
- 5 Change the **Work Coordinates** value to **0**.



- 6 Click **OK** to close the **Control Definition Manager**. Choose **Yes** when prompted to save the changes.
- 7 Click **OK** to close the **Machine Definition Manager**. Choose **Yes** when prompted to save the changes.
- 8 If you already have a machine group in the current part file that uses the control definition that you just edited, Mastercam prompts you to replace it with the edited version. Click **Yes**.

If your part file already has existing operations that use the edited machine definition, you will need to edit them from the Operations Manager in Mastercam.

- 1 Select the operations in the Toolpath Manager.
- 2 Right-click and select **Edit selected operations, Edit common parameters**.

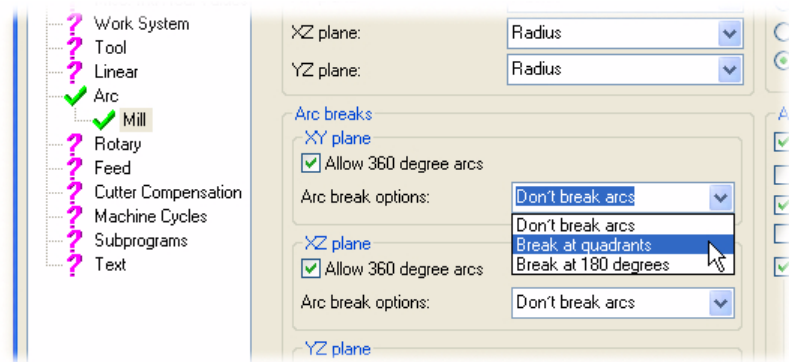


- 3 In the **Edit Common Parameters** dialog box, select the **Misc. values** button and change the **Work Coordinates** value to **0**.

Do not break arcs at the quadrants

This is set in the control definition.

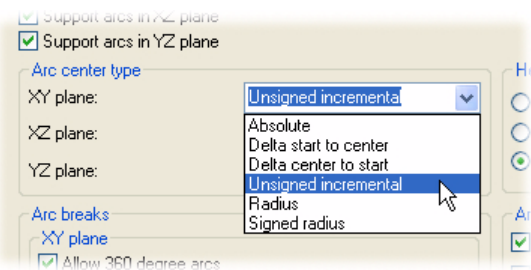
- 1 Go to the **Arc** page in the **Control Definition Manager**.
- 2 Select the desired options. You can set arc break options individually for each plane.



Output I,J,K with arcs

This is set in the control definition.

- 1 Go to the **Arc** page in the **Control Definition Manager**.
- 2 Select the **Arc center type**.

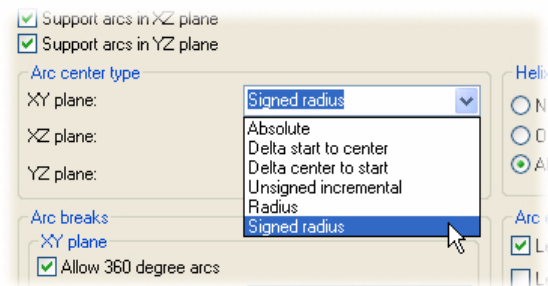


Three of the options will generate IJK output: **Delta start to center** and **Delta center to start** produce signed incremental output, or choose **Unsigned incremental**. You can set the arc center type individually for each plane. This selection sets the **arctype\$** variable in your post customization file.

Output R signed when the sweep exceeds 180 degrees

This is set in the control definition.

- 1 Go to the **Arc** page in the **Control Definition Manager**.
- 2 Select **Signed radius** as the **Arc center type**. You can set the arc center type individually for each plane.



This selection sets the **arctype\$** variable in your post customization file.

Allow sequence numbers to be greater than N9999

This is set in the control definition.

- 1 Go to the **NC Output** page in the **Control Definition Manager**.
- 2 Enter the desired value in the **Maximum sequence number** field.

This sets the **seqmax\$** variable in your post customization file.

Omit sequence numbers entirely

This is set in the control definition.

- 1 Go to the **NC Output** page in the **Control Definition Manager**.
- 2 Deselect the **Output sequence numbers** option.

This sets the **omitseq\$** variable in your post customization file.

Set up a gear range table

- 1 Search for the numeric variable **use_gear** and find this line:

```
use_gear : 0 #Output gear selection code, 0=no, 1=yes
```

- 2 Set the value to 1.

```
use_gear : 1 #Output gear selection code, 0=no, 1=yes
```

- 3 Find the following block of code:

```
# -----
# Define the gear selection code
flktbl 1 3 #Lookup table definition - table no. - no. entries
  40  0      #Low gear range
  41  400    #Med gear range
  42  2250   #Hi gear range
```

- 4 Adjust the table to your requirements by modifying and adding to the lookup table entries. Remember to keep the **no entries** current on the table declaration line.

This lookup table selects a gear range value based on the spindle speed. Each gear range is defined by its lower limit. The following postline from the **pgear** postblock returns the selected value:

```
gear = frange (one, speed)
```

The value is subsequently formatted and output.

Modify the motion Gcode

- 1 Search for the post function **fstrsel** and find this block of code:

```
# Motion G code selection
sg00 G0 #Rapid
sg01 G1 #Linear feed
sg02 G2 #Circular interpolation CW
sg03 G3 #Circular interpolation CCW
sg04 G4 #Dwell
sgcode #Target for string

fstrsel sg00 gcode$ sgcode 5 -1fstrsel sg00 gcode$ sgcode 5 -1
```

The string variables above the **fstrsel** line are placed in the target string variable **sgcode**, which is used as an output statement.

- 2 To modify your output, simply modify the strings that are assigned to each individual variable. For example, change:

```
sg00 G0 #Rapid
```

to:

```
sg00 G00 #Rapid
```

to output **G00** instead of **G0**.

Change the format of a numeric variable

Formatting a numeric variable involves two different functions:

- Post function **fs** and **fs2** are used to define numeric formats.
- Post function **fmt** is used to assign a specific format to a specific variable.

Follow this general outline to change the format of a variable:

- First, find the format statement that contains the variable that you want to re-format.
Search for the variable name in the post customization file until you see the proper **fmt** statement. (If it is not, you may need to create a format assignment for it.) For example, this statement assigns a format to the variable **feed**:

```
fmt F 15 feed #Feed rate
```

The third parameter in this line tells you that format statement number **15** supplies the numeric formatting for this variable.

- Next, search for format statement number 15 and find:

```
fs2 15 0.2 0.1 #Decimal, absolute, 2/1 place
```

At this point, you can do either of two things:

- Change the number in the **fmt** statement to use a different format statement.
- Edit the **fs2** statement to change its format. This will also change the formatting for every variable that uses this statement. See page 1.

If you do not find a **fmt** statement for the variable, you need to create one. See page 2.

Change the prefix of a numeric variable

- 1 Find the format (**fmt**) statement that contains the variable that you want to re-format. For example, if you wanted **x_inc** to output as **U** instead of **X**, the statement would look like this:

```
fmt X 15 x_inc #incremental X value
```

(15 could be any number, from 1–30.)

- 2 The second parameter in the line is the prefix. Change it to the desired letter—for example, U.

```
fmt U 15 x_inc #incremental X value
```

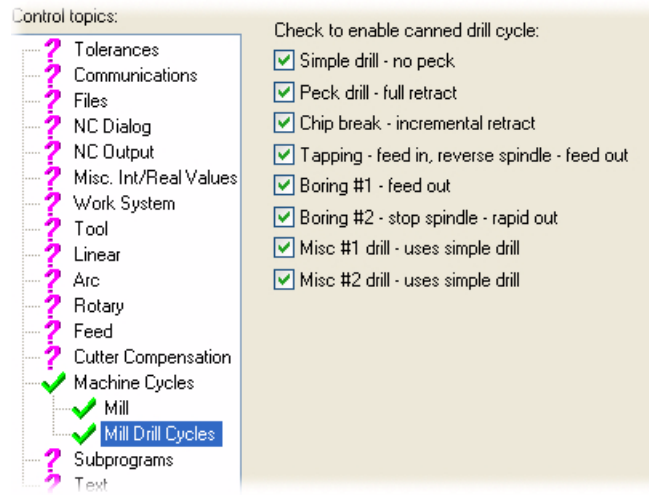
The prefix does not need to be a single letter, it can be any string you wish. See page 2 to learn more.

NOTE: Use double quotes if the prefix string has spaces.

Select long code or canned cycle drilling output

This is set in the control definition.

- 1 Go to the **Mill Drill Cycles** page in the **Control Definition Manager**.
- 2 Select the cycles for which you want canned cycle output:



There are separate pages for mill and lathe canned cycles. If you are using a lathe or mill/turn machine, you will see the appropriate pages.

Change the order of words in the NC output

You can change the order of the words output to the NC file simply by rearranging the output statements on a postline. For example, this line is copied from the postblock **plinout**:

```
pcan1, pbld, n$, sgplane, `sgcode, sgabsinc, pccdia,
pxout, pyout, pzout, feed, strcantext, scoolant, e$
```

Its possible output might be:

```
N10 G1 G90 X10. Y10. F5. M8
```

By rearranging the lines like this:

```
pcan1, pbld, n$, sgabsinc, `sgcode, sgplane, pccdia,
pxout, pyout, pzout, strcantext, scoolant, feed, e$
```

The output changes to:

```
N10 G90 G1 X10. Y10. M8 F5.
```

Prompt the user for information during posting

First, declare a user prompt function to display a prompt on the Mastercam screen. In the Definition section of your post, enter a user prompt function. For example:

```
fq 1 omitseq$ Enter 1 to omit sequences, 0 to use sequences
```

Then, call the question by inserting **q** with the **fq** definition number (for example, **q1**) on a separate postline in the postblock where you want to prompt the user. **pq** would be a logical postblock for this user prompt function call.

ASCII character table

The following table contains the 128 characters and control codes used in standard RS-232 (serial) communications.

Decimal	Hex	Character or control code
0	0	NUL (null)
1	1	SOH (start of heading)
2	2	STX (start of text)
3	3	ETX (end of text)
4	4	EOT (end of transmission)
5	5	ENQ (enquiry)
6	6	ACK (acknowledge)
7	7	BEL (bell)
8	8	BS (backspace)
9	9	TAB (horizontal tab)
10	A	LF (NL, new line, line feed)
11	B	VT (vertical tab)
12	C	FF (NP, form feed, new page)
13	D	CR (carriage return)
14	E	SO (shift out)
15	F	SI (shift in)
16	10	DLE (data link escape)
17	11	DC1 (device control 1) / XON (transmission on)
18	12	DC2 (device control 2)
19	13	DC3 (device control 3) / XOFF (transmission off)
20	14	DC4 (device control 4)
21	15	NAK (negative acknowledgement)
22	16	SYN (synchronous idle)
23	17	ETB (end of transmission)
24	18	CAN (cancel)
25	19	EM (end of medium)
26	1A	SUB (substitute)
27	1B	ESC (escape)
28	1C	FS (file separator)

Decimal	Hex	Character or control code
29	1D	GS (group separator)
30	1E	RS (record separator)
31	1F	US (unit separator)
32	20	[space]
33	21	!
34	22	"
35	23	#
36	24	\$
37	25	%
38	26	&
39	27	'
40	28	(
41	29)
42	2A	*
43	2B	+
44	2C	,
45	2D	-
46	2E	.
47	2F	/
48	30	0
49	31	1
50	32	2
51	33	3
52	34	4
53	35	5
54	36	6
55	37	7
56	38	8
57	39	9
58	3A	:
59	3B	;

Decimal	Hex	Character or control code
60	3C	<
61	3D	=
62	3E	>
63	3F	?
64	40	@
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G
72	48	H
73	49	I
74	4A	J
75	4B	K
76	4C	L
77	4D	M
78	4E	N
79	4F	O
80	50	P
81	51	Q
82	52	R
83	53	S
84	54	T
85	55	U
86	56	V
87	57	W
88	58	X
89	59	Y
90	5A	Z
91	5B	[
92	5C	\
93	5D]
94	5E	^

Decimal	Hex	Character or control code
95	5F	_
96	60	`
97	61	a
98	62	b
99	63	c
100	64	d
101	65	e
102	66	f
103	67	g
104	68	h
105	69	i
106	6A	j
107	6B	k
108	6C	l
109	6D	m
110	6E	n
111	6F	o
112	70	p
113	71	q
114	72	r
115	73	s
116	74	t
117	75	u
118	76	v
119	77	w
120	78	x
121	79	y
122	7A	z
123	7B	{
124	7C	
125	7D	}
126	7E	~
127	7F	[delete]